

IV. AMENDMENTS TO THE DRAWINGS

--- Replacement and annotated mark-up drawing sheets for amended figures showing the amended figures, if any, are attached at the Appendix hereto. Each figure is in compliance with 37 C.F.R. § 1.84. An explanation of the changes, if any, is set forth below in this "Amendments to the Drawings" section. Replacement drawing sheets are identified in the top margin as "Replacement Sheet." Any replacement drawing sheet including amended figures includes all of the figures appearing on the immediate prior version of the sheet. Any annotated drawing sheets, if the same are required by the Examiner, are identified in the top margin as "Annotated Marked-Up Drawings." Any deleted figure is noted by an instruction to delete the figure. Any corresponding amendment to the specification necessary to be made because of an amendment to the drawings in this section is made in the corresponding "Amendments to Specification" section.

- THE DRAWINGS OF THE PATENT IS HEREBY AMENDED AS SET FORTH BELOW:
 - *No Amendment Made to the Drawings*

V. REMARKS/ARGUMENTS

- STATUS OF THE CLAIMS

Claims 1 to 4 and 6 to 12 are pending. Claim 5 has been cancelled.

- REJECTIONS TO THE CLAIMS

- 35 U.S.C. 103(a) REJECTION

- Examiner's Stance

The Examiner has rejected independent claim 1 and dependent claims 6 and 8 under *35 U.S.C. 103(a)* as being obvious in view of Udagawa et al (U.S. Patent No. 6,195,125) in further view of Kilgore et al. (U.S. Patent No. 5,903,659). The Examiner alleges that Udagawa teaches a video compression system comprising a lens element and a sensor array including two sensors, one of which has one quarter the number of pixels of the other. The Examiner states that Udagawa does not teach a differencing element in communication with the first and second sensors. The Examiner further alleges that Kilgore teaches a comparison function where each value of the anti-mean (focus) is compared to the corresponding anti-mean (blur). The Examiner concludes that it would be obvious to combine the teachings for processing images.

Regarding dependent claim 6, the Examiner alleges that Udagawa teaches a lens element that includes multiple lenses. Examiner also states that, relative to dependent claim 8, Udagawa teaches each lens having a different focal length and that the sensor is a planer sensor.

The Examiner has also rejected dependent claims 2 and 3 under *35 U.S.C. 103(a)* as being obvious with respect to Udagawa et al (U.S. Patent No. 6,195,125) in view of Kilgore et al. (U.S. Patent No. 5,903,659) and in further view of Peters et al., (U.S. Patent 5,541,653). The Examiner alleges that Peters teaches a beam splitter between the lens element and the sensor array for transmitting a first percentage of light to the first sensor and a second percentage of light to the second sensor. The Examiner concludes that it would be

obvious to combine the teachings because it is a crucial part of most interferometers that require precise measurement of indices of refraction.

The Examiner has also rejected dependent claims 4 and 7 under *35 U.S.C. 103(a)* as being obvious with respect to Udagawa et al (U.S. Patent No. 6,195,125) in view of Kilgore et al. (U.S. Patent No. 5,903,659) and in further view of Kerstens et al. (U.S. Patent No. 5,248,876). The Examiner alleges that Kerstens teaches the employment of a sensor mask to provide complete images and height measurements and inspection. The Examiner states that Kerstens discloses that since a stepped sensor array is not commercially available, a sensor mask which is a mirror image of source mask and a focusing lens is provided. The Examiner concludes that the disclosures can be combined to teach the use of a sensor mask.

The Examiner has also rejected dependent claims 5 and 9 to 11 under *35 U.S.C. 103(a)* as being obvious with respect to Udagawa et al (U.S. Patent No. 6,195,125) in view of Kilgore et al. (U.S. Patent No. 5,903,659) and in further view of Blaettermann et al. (U.S. Patent Application Publication No. 2003/0142869). The Examiner states that, from Blaettermann, it is clear that a coefficient is quantized by dividing it by a weight and then rounding or truncating the result. Further, the Examiner alleges that the programmable attenuation circuit is nothing more than a component to reduce the signal.

The Examiner has also rejected dependent claim 12 under *35 U.S.C. 103(a)* as being obvious with respect to Udagawa et al (U.S. Patent No. 6,195,125) in view of Kilgore et al. (U.S. Patent No. 5,903,659) and in further view of Blaettermann et al. (U.S. Patent Application Publication No. 2003/0142869) and further in view of Tewksbury et al. (U.S. Patent No. 4,107,669). The Examiner alleges that Tewksbury teaches a second differencing circuit to retain the signal independent feedback network as in video coders.

Finally, the Examiner noted that it is incumbent upon the Applicant to analyze the prior art documents in their entirety.

- *Applicant's Response*

The Applicant respectfully traverses the Examiner's rejection of independent claim 1 and dependent claims 2 to 4 and 6 to 12 for obviousness under *35 U.S.C. 103(a)* in view of Udagawa et al (U.S. Patent No. 6,195,125) in view of Kilgore et al. (U.S. Patent

No. 5,903,659) and in further view of Blaettermann et al. (U.S. Patent Application Publication No. 2003/0142869), Tewksbury et al. (U.S. Patent No. 4,107,669), Peters et al. (U.S. Patent 5,541,653), and Kerstens et al. (U.S. Patent No. 5,248,876). The Applicant notes the basis for factual inquires, necessary to establish a *prima facie* case of obviousness, as set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or non-obviousness.

Further, the Applicant calls the Examiner's attention to MPEP 2143.03 which states that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. The Applicant respectfully asserts that the cited prior art, taken by singly or in combination, does not satisfy the necessary elements for the establishment of a *prima facie* case of obviousness.

The Applicant's sole independent claim 1 comprises limitations which may be paraphrased, for succinctness as: a lens element having one or more lenses, a sensor array comprising a first sensor incorporating X times Y pixels for sampling focused light and a second sensor incorporating X/2 times Y/2 pixels for sampling defocused light, and an electronic differencing element for differencing the coefficients of co-located pixels on the first and second sensors.

The Applicant strongly disagrees with the Examiner's allegation, regarding instant claim 1, that Udagawa teaches the second of the three limitations; specifically, a sensor array comprising a first sensor incorporating X times Y pixels for sampling focused light and a second sensor incorporating X/2 times Y/2 pixels for sampling defocused light. The Applicant further asserts that this limitation is not taught or suggested in any of the other cited references including Kilgore et al. (U.S. Patent No. 5,903,659), Blaettermann et al. (U.S. Patent Application Publication No. 2003/0142869), Tewksbury et al. (U.S. Patent

No. 4,107,669), Peters et al.(U.S. Patent 5,541,653), and Kerstens et al. (U.S. Patent No. 5,248,876).

Udagawa, in contrast to the two sensor teaching of instant claim 1, exclusively teaches a pixel shifting technique, as disclosed in the specification of U.S. Patent No. 6,195,125:

The present invention has been made in consideration of the above situation, and has as its object to provide an image sensing apparatus and method having a plurality of image sensing modes for shifting a solid-state image sensing device to different positions so as to be able to obtain images of different resolutions, as well as to provide a data handling method of image data obtained by the aforesaid image sensing apparatus. [col. 2; lines 27-34]

The physical shifting of a single sensor as disclosed in Udagawa is exemplified as follows:

Thereafter, by driving a CCD shifting unit (e.g., piezoelectric element) 9, the relative position of the CCD 3 is moved in the horizontal direction or the vertical direction, then the second image is sensed. [col. 5: lines 49-52]

The “shifting” limitation is included in the sole independent claim of U.S. Patent No. 6,195,125, where it is claimed that the invention must include:

shifting means for shifting image formation position of the image of the object on said image sensing means; [col. 19; lines 63-64]

The Kilgore reference (U.S. Patent No. 5,903,659) teaches the use of a single sensor alternately presented with two sets of optical components which yield alternating focused and blurred images disclosed as follows:

One exemplary way to achieve the focus and blurred images is to use a filter wheel in the sensor optics 12. The filter wheel spins, and has separate optics/lens to provide the focus image and the blurred image. [col. 2; line 64 – col.3; line 2].

Here again, as with Udagawa, Kilgore does not provide teachings or suggestions of the use of two sensors having a specified ratio between the numbers of pixels in each, nor that one of the sensors is used exclusively to capture a focused image and the second sensor used exclusively to capture the de-focused image.

Therefore, Applicant asserts that a *prima facie* case of obviousness has not been established for claim 1, and the rejection under 35 U.S.C. 103(a) should be withdrawn.

Regarding the Examiner's grounds for rejection of Applicant's dependent claims 6 and 8, the Applicant respectfully notes that as provided in 37 C.F.R. 1.75, claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. Depcndnt claims 6 and 8 thus incorporate the limitations of independent claim 1. Applicant asserts that a *prima facie* case of obviousness has not been established for claim 1, as described *supra*, and therefore claims 6 and 8 must also be non-obvious and the rejection under 35 U.S.C. 103(a) should be withdrawn.

Regarding the Examiner's grounds for rejection of Applicant's dependent claims 2 and 3, the Applicant respectfully notes that as provided in 37 C.F.R. 1.75, claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. Dependent claims 2 and 3 thus incorporate the limitations of independent claim 1. Applicant observes that the Peters reference (U.S. Patent 5,541,653) teaches the use of multiple plane image sensors but there are significant differences with the Applicant's claimed multiple sensors. Each of the Peters' sensors are differentiated from the Applicant's in that they each detect a different optical spectral band. Further, as taught by Peters, there is no defined ratio of pixels between the sensors nor is the image focused on one sensor and de-focused on the other. Applicant asserts that a *prima facie* case of obviousness has not been established for claim 1, as described *supra*, and therefore claims 2 and 3 must also be non-obvious and the rejection under 35 U.S.C. 103(a) should be withdrawn.

Regarding the Examiner's grounds for rejection of Applicant's dependent claims 4 and 7, the Applicant respectfully notes that as provided in 37 C.F.R. 1.75, claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. Dependent claims 4 and 7 thus incorporate the limitations of independent claim 1. Applicant asserts that a *prima facie* case of obviousness has not been established for claim 1, as described supra, and therefore claims 4 and 7 must also be non-obvious and the rejection under 35 U.S.C. 103(a) should be withdrawn.

With respect to claim 5, Applicant has cancelled this claim noting that it is an unintentional duplication of claim 9.

Regarding the Examiner's grounds for rejection of Applicant's dependent claims 9 to 12, the Applicant respectfully notes that as provided in 37 C.F.R. 1.75, claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. Dependent claims 9 to 12 thus incorporate the limitations of independent claim 1. Applicant asserts that a *prima facie* case of obviousness has not been established for claim 1, as described supra, and therefore claims 9 to 12 must also be non-obvious and the rejection under 35 U.S.C. 103(a) should be withdrawn.

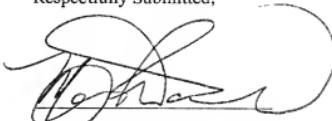
With respect to the Examiner's Note, that it is incumbent upon the Applicant to analyze the prior art documents in their entirety, the Applicant has conducted such an analysis and concludes that the cited prior art documents, in their entirety, do not teach, disclose, or suggest, the limitations claimed by the Applicant in this application.

CONCLUSION TO REMARKS

Applicant states that no new matter has been added. Applicant further asserts that this response is fully responsive to the Examiner's office action dated November 15, 2007 and respectfully requests that the Examiner cancel the rejections and allow the Applicant's claims.

Respectfully Submitted,

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VI. APPENDIX

- *No appendix is intended to be attached*